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### PURE QUARTZ RETORTS.

Chemists Solve the Problem of Resist-  
ance in Extreme Heat.

For many years chemists have sought diligently for some method of securing retorts, test tubes, small furnaces, etc., that could be depended on to resist the extreme limits of any temperature that human ingenuity can produce. This is now said to have been achieved in a new method whereby articles for the laboratory have been manufactured out of pure quartz.

Moreover, at Wallend, England, and at Breda, near Bonn, in Germany, electric means have been perfected whereby furnaces and all other articles for laboratory purposes can be prepared from pure quartz. It is even claimed that in a short while furnaces can be made for manufacturing plants requiring extraordinary high temperatures.

By high temperatures are meant degrees of heat far, far above the melting point of iron or even of platinum. Degrees of temperature, for instance, approaching 2,000 degrees Centigrade—equivalent to approximately 3,600 degrees Fahrenheit. Quite naturally it is only in very few practical operations that any manufacturer demands such a temperature which is not very far below the point at which this world would be resolved once more into a

globe made up entirely of incandescent gas.

It is marvelous, indeed, that mere man has become able to produce and handle such degrees of heat and the difficulties of securing vessels that can resist such primeval heat conditions have been many. The intense heat required to mold articles from pure quartz is obtained by using furnaces fired by electric resistance; that is, furnaces heated by high electric currents that are interrupted by the carbon, from which an electrical resistance furnace must be made.

Quartz can also be melted by the direct heat of the electric arc, but it becomes too much contaminated by the particles that fly into it from the burning ends of the arc. The method in the electric resistance furnace is to permit the outer surface of the quartz to form a combination with the inner carbon of the furnace and to use the part inside of this outer contaminated crust.

The material used is a pure silver sand that is 99.50 per cent silica, or quartz. This sand is placed in the electric furnace and when about 2,000 degrees Centigrade have been produced the quartz sand becomes plastic like very warm putty. It can now be made into narrow tubes as much as sixty-five feet in length and as much as sixty-five pounds of the molten quartz has been handled at a time at

Wallend, in England.

One great difficulty is the fact that molten quartz turns into gas when heated just a trifle above its melting point. However, all these chemical and practical obstacles have been overcome now and many first-class laboratory articles are beginning to acquire these snow-white utensils that can resist more heat than any other material.

The most precious quality of the quartz articles is their insensibility to any changes in temperature. They offer practically no resistance to the passage of heat waves. This lack of resistance to heat waves is what enables quartz to endure exposure to tremendous temperatures; in fact, to use a homely metaphor quartz articles "don't feel the heat."

For example, a furnace made of quartz can be exposed to very high temperatures and yet the furnace itself will remain so cool that combustible articles touching it will not be set on fire.

### SCIENTIFIC MISCELLANY.

In the aeroplane of Paul Renard, French engineer, the gyroscope is applied indirectly to give automatic stability. The fly-wheel is mounted in a gimbal frame, and an electric battery of eight or ten cells keeps it in motion in a horizontal plane at that rate of about 10,000 revolutions per minute. As

the aeroplane is tipped, the gyroscope continues to rotate in the horizontal plane. The vertical shaft, however, makes one of four electrical contacts, and this sets in operation the righting mechanism, two of the contacts controlling the longitudinal balance and two the lateral balance. The action promptly restores the machine to its normal position. A gust of wind, for example, may incline the front of the aeroplane downward, but the prompt closing of the electric current tips the rear wings forward, and equilibrium is recovered.

The new beginning of life on an isolated island is eagerly watched by naturalists, and now the Selborne society has been able to study the new flora of a building site near the center of London. The lot was cleared about two years ago. Since then twenty-eight species of flowering plants and ferns have established themselves on it, and mosses, liverwort and other simple plants have appeared. Besides plants commonly distributed by the wind, the bracken, a fern difficult to transplant, has sprung up, presenting a new problem for botanists.

A novel use has been found for the famous speech records of the Vienna Academy of Sciences. This great collection of phonograms was designed to preserve the spoken languages of all lands, with the idioms and variations of dialect, but on magnifying sections of the records 1,000 times, additional value was brought out in new light on the theory of sound. The "A" of the human voice was shown to be different from that of the frog's croak, while new revelations are expected from the study of the voice in disease and of minute variations of dialect.

That the method of taking food, as well as the food itself, has a great effect on the teeth has been pointed out by Dr. J. Slim Wallace in a paper to British dentists. Dental cavities result from the action of bacteria that rapidly multiply in starch, sugar and other fermentable carbohydrates in contact with the teeth, and the dentist may divide the food into two classes—one tending to leave viscous and fermentable carbohydrates about the teeth, and the other acting to brush them away. This suggests that food may be so chosen and eaten as to prevent teeth decay. Each meal should have sufficient hard food to stimulate mastication, with its excellent effect on gums, jaws, teeth and alimentary canal generally, and should end with some article tending to remove the sticky carbohydrates from teeth and mouth. The pap-feeding of children is to be condemned. It is suggested that for breakfast fish, bacon, toast, butter, coffee and tea should take the place of the customary milk, porridge, bread and marmalade; and that other meals should have a large proportion of hard foods.

The new bean described by Aug. Chevalier, grows underground to the size of a very small pea in a small region of central Dahomey, western Africa. It produces a species of Yondzela, a genus hitherto represented by only one species, which produces single-seeded underground pods, both pod and seed being edible, and is cultivated in Brazil and Surinam, as well as over much of Africa. The new species has been grown and sold locally under the name of "dai." The pod, produced at the root of the plant, has the form of a small American peanut, and has but one or two seeds, usually white, though sometimes black, red or variegated. They have an agreeable taste.

Hardened steel dies are produced by electrolytic etching in a recently patented German process. A die-block of hard steel is first made and this is placed in contact with a plaster of Paris reverse model made conducting by saturation with sal ammoniac. With the special dynamo, with a capacity of 20 amperes at one to 15 volts, the die-block is etched to a depth of one-sixteenth of an inch in four or five hours.

### PASTING FEATHERS.

Those of us who have hats trimmed with the bird wings consisting of innumerable little feathers something like fishes' scales know how these drop off and what an unpleasant bald appearance they give to our best hat trimmings. One woman has solved the problem by pasting them on as they come off. They were black in her case, and, so that the paste she used should not show, she pasted them on the back with library paste, in which she dropped black ink and let it soak in. This same plan can be followed with any color ink to match the feather, even the iridescent feathers (as these often are) being usually easy to match.

Another plan is to use court-plaster, although this is possible only with black and white feathers. The plaster must be cut in little strips and fastened in back to the cloth foundation, for feathers of this sort are always what is called "made," that is, stitched on to a backing of fabric in wing form.

**CABBAGE SALAD WITH BEETS.**  
Chop half a small cabbage very fine and mix it with bottled salad dressing, using one-half cup salad dressing to two cups of chopped cabbage. Garnish with beards of cold boiled beets. These beards may be cut out with a small cookie cutter or they may be easily cut out with a sharp knife, since it is not necessary that they shall be perfect.

**VELVET AND FUR.**  
One of the toidest of dresses was worn recently by a Parisienne. The lower part of the waist and the skirt were made of dark velvet. The upper part of the skirt, which was cut with a round neck, and the elbow sleeves were made of white fur. It suggested the polar regions. The hat worn with it was made of velvet and fur to match.

### THE COLORADO RIVER

Its Control Involves a Perplexing Problem of International Comity

It seems to be conceded that if the Colorado river is left uncontrolled it will within a few years, inevitably turn its entire flow into the depression of which the Salton sea is the lowest point and engulf the entire Imperial valley in a great inland sea. In this the erratic river will only be repeating a process by which at intervals it has covered different parts

## Thousands Suffer With Eye Trouble

Who attribute the cause to something else, Headaches, Nervousness, Painful, Inflamed, Smarting, Itching and Gluey Eyes, Granulated Eye-lids, etc., are all **THE RESULT OF EYE-STRAIN.**

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of its delta.

As the stream flows it gradually deposits silt in its bed and along its banks until it raises itself high above the surrounding country.

Then at some time comes a great flood which bursts through the alluvial barriers which the stream has itself raised, again finds the lowest place for low water flow, and recommences the process.

The time has now arrived when the river is ready to break bounds and all engineers agree that if nothing is done it is a question of but a short time when an unusual flood will carry irreparable disaster to the fertile Imperial valley.

Part of the threatened territory is in the United States and part in Mexico, but all the restraining work must be done in Mexico.

In the face of this danger the Southern Pacific Company, upon the

request of the president during the recess of congress, advanced something over a million dollars and by heroic work averted the danger for the time being.

Congress having thus far refused to reimburse the company, not a cent can be expected now from that or any similar source.

Congress, however, has appropriated a million dollars—not believed to be sufficient—to be expended for the purpose.

The question arises whether the Mexican government will permit the United States to do public work in its territory.

All governments object to permitting any other government to enter upon their soil for any purpose whatever. Once lodged, it has happened that they have been difficult to dislodge.

This feeling is very strong in Mexico, which has suffered loss of terri-

tory and especially strong against this government, by which it sustained that loss.

Doubtless negotiations have taken place and presumably our State Department expects to secure Mexican consent.

Mexico has, perhaps, more land in danger than this country, but the improvements are trifling in comparison with ours.

It is understood that the Mexican government insists that the disturbance of the river was caused by the operations of Americans, and that Americans should bear the entire cost of repairing the damage.

But the admission of our government, first to construct, and thereafter to police and protect the necessary works, is an entirely different matter.

Probably, however, a way will be found to accomplish what both countries desire.—San Francisco Chronicle.

## Is Your Kitchen Plumbing Modern?



While it is commendable to give the utmost attention to the construction of your bathroom, it is advisable to give as equally good attention to the sanitary equipment of your kitchen.

Take into consideration the fact that all your food is prepared in the kitchen and that the utensils in which it is prepared depend upon the sanitary equipment of the kitchen for their cleanliness. Is this fact alone not sufficient to warrant the installation of a thoroughly sanitary kitchen sink?

We would like to examine the plumbing in your kitchen and if it is defective, tell you the cost of putting in a "Standard" Porcelain Enameled Sink with an abundant supply of hot and cold running water. This done, cleanliness will be assured.

Our booklet, "Modern Home Plumbing," shows several kitchens equipped with "Standard" Sinks. Call, write or 'phone for a copy. Every "Standard" Sink is fully guaranteed.

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